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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,617	02/18/2004	Masahiko Kamiya	14-028	8878

23400 7590 04/20/2005

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SUITE 101
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EXAMINER

SCHWARTZ, CHRISTOPHER P

ART UNIT	PAPER NUMBER
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3683

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/779,617

Applicant(s)

KAMIYA ET AL.

Examiner

Christopher P. Schwartz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

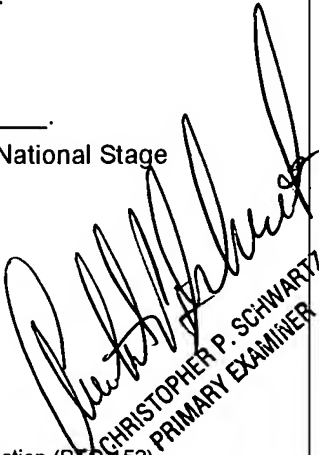
- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.


CHRISTOPHER P. SCHWARTZ
PRIMARY EXAMINER

DETAILED ACTION

1. Applicant's response filed January 1, 2005 has been received and considered.

Claims 1-20 are pending in the application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding the independent claims, from the specification at pages 4 and 10, it appears that a dither current with a frequency different from that of a resonance frequency of a noise generating brake component is supplied to the linear valve 9-- or the braking force generating portion, to cancel the vibrations responsible for the noise through differential fluid pressure pulsations.

Therefore the limitation "by applying to the braking force regulating portion... a vibration" is confusing and unclear.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

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Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1,2,4,10 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Tsang et al. in view of Kuragaki et al US Publication 2001/0017077 or Yamamuro '908.

Regarding claim 1 Tsang et al. discloses a brake system having a noise detection and prevention device. Please see the discussion in column 1. The brake force "regulating portion", as broadly claimed, is considered to be the valves 56,62,68 and 70,72,74. Note the control portion at 80.

Tsang et al. lacks using a "dither current" to control the valves upon the detection of excessive noise levels. Tsang et al. Does state in column 1 "The central processing unit reacts to the operational signal corresponding to vibration by providing the first, second and third solenoids of the antilock system with an input to modulate the fluid pressure provided to create a predetermined frequency in the fluid pressure to nullify or

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modify the vibrations and thereby substantially reduce the creation of noise during a braking application”.

The references to Kuragaki et al. or Yamamuro '908 both teach using dither currents to smooth out the operation of solenoid valves and thereby reduce noise. Please refer to the discussion in paragraphs 4,7, and 8 in Kuragaki et al. and column col 16 lines 47-67 over to col. 17 lines 1-8.

One having ordinary skill in the art at the time of the invention would have found it obvious to have used a “dither current” in the device of Tsang et al. to control the actuation of the valves, with a frequency different from the vibration generating structure, in order to minimize noise and promote smoother operation of the electromagnetic valves, as taught by either Kuragaki et al. or Yamamuro '908.

Regarding claim 2 note that Tsang et al. uses proportioning valves at 54 and 57. These valves are often solenoid actuated, as is known in the art. However, simply to have modified Tsang et al. so that a linear/solenoid actuated valve could be used for these valves would simply amount to an alternate equivalent arrangement of known valves dependent upon such well known factors as performance, cost and reliability. And to have used a dither current to regulate such a valve would have been obvious for the reasons above. Notwithstanding the position above just about any valve in the device of Tsang et al. may be interpreted as a “linear valve” ,as broadly claimed, as this is a term not specific to any one particular type of valve the art.

Regarding claim 4 to have adjusted the “dither frequency” dependent upon the braking characteristics (i.e. noise level etc.) would have been obvious to the ordinary

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skilled worker in the art at the time of the invention. Please see the discussion in paragraph 8 of Kuragaki et al.

Regarding claim 10, notwithstanding the position outline above in regard to claim 2, just about any valve in the device of Tsang et al. may be interpreted as a "linear valve" as broadly claimed, as this is a term not specific to any one type of valve in the art.

Regarding claims 11,12 to have detected the vibration in the caliper with the noise sensing system of Tsang et al. or to have sensed or estimated this vibration by detecting the wheel or vehicle speeds (inherent in the system of Tsang et al) would have been obvious to modulate the fluid pressure at the appropriate frequency within the wheel cylinder to counter the vibrations. See the abstract.

Regarding claim 13 the position outlined above is relied upon for a rejection of this claim.

Specifically, to have altered the amplitude or frequency of the dither current to the linear valve of Tsang et al., as modified, (see discussion of cl. 2 above) would have been obvious to the ordinary skilled worker in the art to keep the performance of the valves (i.e. noise level, smooth operation) optimal during changing road or vehicle operating conditions.

Regarding claims 14,15,17 in light of the explanations given above these requirements are taught by the combined references.

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7. Claims 3,16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsang et al. in view of Kuragaki et al. or Yamamuro '908 as applied to claim 2 above, and further in view of Yamaguchi et al. '581.

Regarding claims 3,16 Tsang et al., as modified, lacks a showing of the particulars of the valving arrangement claimed.

Yamaguchi et al. '581 shows a brake system having a valve arrangement similar to applicants.

To have modified Tsang et al. with a valve arrangement shown by Yamaguchi et al., and to have suppressed noise levels by using a dither current for valve actuation would have been obvious for the reasons stated above.

8. Claims 5-9,18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsang et al. in view of Kuragaki et al. or Yamamuro '908, as applied to claim 1 above, and further in view of Takahashi.

Regarding claims 5,17 Tsang et al., as modified, lacks showing using a "driving actuator" for the braking force regulating portion.

Takahashi teaches using well known electric actuators 152 to actuate the brakes.

One having ordinary skill in the art at the time of the invention would have found it obvious to have used such electric actuators to actuate the brakes in Tsang et al., as modified above, for increased responsiveness. Further to have superimposed the dither current onto a "target current" (as is known to do for dither currents) to actuate these actuators for the reasons given above would also have been obvious to the ordinary skilled worker in the art.

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Regarding claims 6-9,19,20 in light of the teachings of Kuragaki et al. or Yamamuro '908, these limitations would have been obvious to the ordinary skilled worker in the art through routine optimization of the device, to reduce noise and/or to improve energy savings.

Response to Arguments

9. Applicant's arguments filed January 1, 2005 have been fully considered but they are not persuasive. Applicants representative states on page 13 of the response "In operation, the dither current is applied to a valve to suppress brake noise by changing the braking force generated by a brake caliper or a brake rotor. In other words, by applying the dither current to the braking force generating portion, a vibration with a frequency different from the frequency of the dither current is generated on the brake caliper or the brake rotor....different from an object to which the dither current is applied" .

The specification does not state this. Nor do the claims. At the bottom of page 4 over to page 5 it is stated "It should be noted that by setting the dither frequency to a lower (i.e. different) frequency than a resonance frequency of a brake caliper or a rotor.. the brake noise .. caused by sympathetic vibration of a caliper portion can be effectively suppressed or prevented". Also see the bottom of page 15. The vibrations which are created by the dither current are presumably transferred via pressure differentials of the fluid to the brake caliper to cancel the vibrations generated by either the rotor or the caliper—according to the specification.

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Notwithstanding applicant's misinterpretation above, and simply speaking, vibrations from noise generating components are often suppressed or canceled simply by superimposing "other vibrations", resonating at different frequencies or phases, on them. This is how actively controlled anti-vibration systems work.

Please see the brake related references cited for a general teaching.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P. Schwartz whose telephone number is 703-308-0576. The examiner can normally be reached on M-F 9:30-6:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Bucci can be reached on 703-308-3668. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Cps
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CHRISTOPHER P. SCHWARTZ
PRIMARY EXAMINER

